

SSVEO IFA List

Date:02/27/2003

STS - 109, OV - 102, Columbia (27)

Time:03:43:PM

<u>Tracking No</u>	<u>Time</u>	<u>Classification</u>	<u>Documentation</u>	<u>Subsystem</u>	
MER - 1	MET: 000:00:08	Problem	FIAR	IFA STS-109-V-01	Active Thermal Control
EECOM-01	GMT: 060:11:31		SPR 109RF01	UA	Subsytem
			IPR 107V-0001	PR	Manager: Son Nguyen
					714-372-5058
					Engineer: Carmelo
					Asuncion
					281-853-1635

Title: Freon Coolant Loop 1 Degraded Aft Cold Plate Flow (ORB)

Summary: Several seconds after MECO, the Freon coolant loop (FCL) 1 aft coldplate flow rate (V63R1105) decreased from 304 lb/hr to 226 lb/hr. The FCL 1 interchanger flow and payload heat exchanger flow increased at the same time, which confirmed a restriction is causing the reduction of flow in the aft coldplate branch. The flow rate has been stable since the event. The Flight Rules state that the minimum flow rate in the aft coldplate branch is 211 lb/hr actual, 236 lb/hr allowing for measurement uncertainty, for a one FCL entry. The analysis and assumptions used to determine this limit were reviewed and it was determined that despite the degraded flow, FCL 1 will be able to provide adequate cooling during entry in the event of a failure of FCL 2. As a result, the Mission Management Team decided that the mission should continue as planned.

Post-flight x-ray revealed a 0.5" object near the orifice upstream of the aft cold-plate.

<u>Tracking No</u>	<u>Time</u>	<u>Classification</u>	<u>Documentation</u>	<u>Subsystem</u>	
MER - 2	MET: 000:04:34	Problem	FIAR	IFA STS-109-V-02	MECH
MMACS-01	GMT: 060:15:57		SPR 109RF05	UA	Manager: Ruben Smith
			IPR 107V-0003	PR	714-372-5064
					Engineer: Jeff Goodmark

Title: Airlock A Hatch Locking Device Difficult to Actuate (ORB)

Summary: On flight day 1, when the crew attempted to open the internal airlock hatch, or "A" hatch, they reported difficulty moving the actuator locking tab out of the locked position, and therefore could not unlatch the hatch. While "jiggling" the actuator handle, they were able to move it axially, or away from the actuator. When they pressed it back against the actuator, they were able to move the locking lever and unlatch the hatch. While this actuator handle is designed to be removeable, it is supposed to be fully seated for hatch latching and unlatching operations and should not have the kind of looseness reported.

It has been recommended that for the duration of the flight, the crew leave the "A" hatch actuator unlocked. The hatch latch actuator utilizes a no-back clutch to ensure it is not backdriven by loads from the latches. In addition, whenever the airlock is depressurized, the differential pressure across the hatch will prevent any inadvertent opening.

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MER - 7	MET: 000:00:08 GMT: 060:11:31	Problem	FIAR SPR 109RF03 IPR 107V-0005	IFA STS-109-V-03 UA PR Manager: Tim Reith 281-853-1616 Engineer: Pat Kavanaugh 281-853-1579

Title: MPS LH2 4-Inch Recirculation Disconnect Slow-to-Close (ORB)

Summary: Review of valve timing data determined that the MPS LH2 4-inch recirculation disconnect was slow to close when commanded at MECO. The requirement is 2.8 seconds maximum from signal-to-switch (close power on to close indication on). The signal-to-switch time for the disconnect was 13.79 seconds. The disconnect open indication was lost approximate 0.5 seconds after the loss of open power indicating partial movement of the disconnect. The close indication on coincided with the ET/Orbiter umbilical retract implying a back-up mechanical closure.

The 4-inch recirculation disconnect is not operated after closure at MECO and this slow response has no mission impact. Troubleshooting plans are in work.

<u>Tracking No</u>	<u>Time</u>	<u>Classification</u>	<u>Documentation</u>	<u>Subsystem</u>
MER - 10 GNC-01	MET: 000:17:50 GMT: 061:05:13	Problem	FIAR SPR 109RF07 IPR 107V-0010	IFA STS-109-V-04 UA PR Manager: Dave Heidman 714-372-5898

Engineer: Don McCorvey
281-853-1689

Title: Forward THC -X Contact Lost During One Burn (ORB)

Summary: At 061:05:12:58 G.m.t (00:17:50:56 MET), channel C on the forward THC turned off earlier than expected during the -X NC2 burn. The problem has not repeated in subsequent -X pulses.

The switch inside the THC is a snap-action rotary device using magnets and Hall-effect sensors to ensure simultaneous activation and deactivation of all three discrete channels. According to the manufacturer, it is impossible for one sensor to turn off by itself without a fault in the sensor or the signal path from the sensor to the MDM, or momentary loss of power to the THC. There is no mission impact. Data evaluation is on going. Evaluation of the telemetry data for the DDU indicates no BITE flags on any channel, and the new DDUs provide a minimum 1 second flag to ensure it is recorded. The THC is 1R2 for ET separation (down jets), 1R3 for orbit ops.

<u>Tracking No</u>	<u>Time</u>	<u>Classification</u>	<u>Documentation</u>	<u>Subsystem</u>	
MER - 14	MET: 008:15:15	Problem	FIAR	IFA STS-109-V-05	Active Thermal Control
MER-14	GMT: 069:02:37		SPR 109RF08	UA	Subsystem
			IPR 107V-0011	PR	Manager: Son Nguyen
					714-372-5058
					Engineer: Carmelo
					Asuncion
					281-853-1635

Title: FES Accumulator/Hi-Load Feedline B Heater System 2 Failure (ORB)

Summary: At approximately 069:02:37 G.m.t. (008:15:15 MET), the FES accumulator/hi-load feedline B (starboard) heater system 2 failed off. The thermostat is located on the accumulator line and the temperature sensor on the accumulator line (V63T1894A) had been indicating the heater turning on at approximately 68 ?F. When the accumulator line temperature dropped to 50 ?F, the crew switched to heater system 1, which is performing nominally.

Hamilton Sundstrand will assist in post-flight checkout and repair of the heater on the FES assembly.

<u>Tracking No</u>	<u>Time</u>	<u>Classification</u>	<u>Documentation</u>	<u>Subsystem</u>	
MER - 16	MET: 009:20:57	Problem	FIAR	IFA STS-109-V-06	RCS

PROP-02

GMT: 070:08:19

SPR 109RF04

UA

Manager: Brian Werner

IPR

PR RP05-16-0454

714-934-0542

Engineer: Steve Arrieta

281-853-1554

Title: Primary RCS Thruster R3R Failed Off (ORB)

Summary: During the RCS hot-fire, primary RCS thruster R3R failed off when first commanded to fire and was auto-deselected by RCS RM. The RJD output was nominal, however, the chamber pressure reached only 11 psia prior to the thruster being deselected. The thruster did not leak propellant following the fail-off. The thruster injector temperatures and chamber pressure suggest a problem with a thruster pilot-operated valve. The thruster will remain deselected for the remainder of the flight.

Post-flight, all jets on this manifold will be removed and sent to WSTF for GN2 and H2O valve-response testing.

<u>Tracking No</u>	<u>Time</u>	<u>Classification</u>	<u>Documentation</u>	<u>Subsystem</u>
MER - 19	MET: 004:18:11	Problem	FIAR	EPD&C - Hardware
EVA-05	GMT: 065:05:34		SPR 109RF10	
			IPR	
			IFA STS-109-V-07	
			UA	Manager: Han D. Mai
			PR	714-372-5831
				Engineer: Lee A. Leduc
				714-372-5853

Title: Suspect Dual Power Supply and Battery Charger Voltage Spike (ORB)

Summary: During EVA preparations, the crew reported that the back of EV 1 PLSS had a large puddle of water near the EMU battery. Other suit conditions indicated that the feedwater shutoff solenoid valve was open.

Investigation into this occurrence revealed that during STS-77 pre-flight ground testing, a voltage spike from the dual power supply and battery charger resulted in the feedwater shutoff solenoid valve inadvertently opening. The voltage spike from the power supply is a result of fluctuations in the battery charge current due to the EMU fan being in flow control mode, and is unique to specific power supply/EMU combinations. The power supply used in the previous occurrence was downgraded to an engineering unit. A recurrence of this voltage spike is suspected to be the cause of this valve being open. A modification was incorporated in the power supply to preclude this voltage spike from occurring, but the power supplies with this mod have not yet been incorporated into the vehicles. Approval was recently made to incorporate the modified (-0004) power supplies into the vehicles, starting with STS-110.

